

# Riparian Community

📖 Grade Level: 5-6

📖 Subject Areas:  
Language Arts, Science, Social Studies

📖 Duration:  
Pre-visit: 2-3 class periods  
Visit: 2-3 hours  
Post-visit:  
Activity 1: 5-7 days  
Activity 2: 1-2 class periods

📖 Setting:  
Classroom and Mission San Juan

📖 Skills:  
Language Arts: 5.15F; 5.19A, B, C; 5.20 A, B, C, D; 5.24A; 6.15A, C, F; 6.18A, B, C  
Science: 5.1A, B; 5.2B; 5.3C; 6.1A, B; 6.2B; 6.3C; 6.13A, B, C  
Social Studies: 5.6A; 5.7B; 6.7A, B  
(Detailed at end of unit)

📖 Charting the course:  
Students need to be shown pictures of poison ivy. Also, instruct students not to touch any hairy vines.  
Students need to know how to read a map grid.

📖 Essential Terms:  
Riparian community;  
Characteristics of woody plants

## STRUCTURE

**Big Idea**  
**What are the characteristics of woody plants that are part of the San Antonio riparian community at Mission San Juan?**

## Objectives

Students will:

- ◆ Identify woody plant species found along San Antonio River at Mission San Juan.
- ◆ Describe characteristics of woody plants.
- ◆ Use plant materials to produce fabric dyes.
- ◆ Match San Antonio street names to photographs of plants.
- ◆ Use a grid to locate streets on a city map.

## Materials

Engagement (pre-visit):

- ◆ Plant specimens (preferred: these **must** be gathered outside San Antonio Missions NHP area. See Park Ethics in Mission Settlement #6)
- ◆ Illustrated Glossary
- ◆ Drawings of plants
- ◆ Nature sounds CD or tape (Optional)
- ◆ Overhead projector

- ◆ 1-2 blank transparencies per team
- ◆ 1 transparency marker per team
- ◆ Scavenger Hunt Scorecard per team

Engagement (visit):

- ◆ Copy paper
- ◆ Crayons

Exploration (visit):

- ◆ Tree tags (Copy numbers on card stock, punch a hole at the top and place a string through it suitable for draping over a limb or branch--remove at end of visit)
- ◆ Plant pictures from pre-visit (1 set per team)
- ◆ Scorecard (1 per team)
- ◆ Pencil
- ◆ Clipboard (minimum of 1 per team)

Activity 1 (post-visit):

- ◆ Invaluable teacher resource: *A Practical Guide to Edible & Useful Plants* by Delena Tull (Optional)
- ◆ Gallon glass jars, one for each dye color
- ◆ Plant material: green hulls or leaves from pecan tree (brown

hulls produce a lighter dye and takes longer)

- ◆ Plant Material: skins from yellow and red onions (Food stores generally let teachers gather skins from the onion bins)
- ◆ Strainer or loose-woven material
- ◆ ½-yard unbleached domestic cotton (washed) or 4 ounces of natural undyed wool for each dye bath

Activity 2 (post-visit):

- ◆ Street sign cards (1 set per team)
- ◆ San Antonio street map (1 per team)

### **Engagement (Pre-visit):**

1. Explain the classroom scavenger hunt to locate and identify a described plant.
2. Give each team 2 or 3 plant specimens or pictures
3. Instruct students to observe the specimens or pictures and list characteristics that would enable another team to identify the plant.

### **Exploration (Pre-visit):**

1. Collect specimens or pictures from each team. Use these to create a "nature trail" within the room by taping pictures on walls, desks, etc, depending on growing height. As the pictures are taped in place, the route can be identified to the students.
2. Collect students' descriptions of the plants and redistribute them among teams. Make sure that teams do not get their own descriptions.
3. Instruct teams to walk the "trail" and find the plant specimen described. Send students by teams at timed intervals of 2-3 minutes so they are not crowded together along the "trail". (To add realism to this activity, play nature sounds of running water or bird songs in the background.)

### **Explanation (Pre-visit):**

Land areas directly influenced by a body of water with visible vegetation or other physical characteristics showing water influences support a *riparian community*. This includes lands surrounding the San Antonio River and mission *acequia* systems.

Prior to and during the Spanish Mission Period plants were used in a variety

of ways. They were used for food sources, building materials, fabric dyes, household utensils, and medicines. However, some plants contained poisons, which would make them undesirable for ingestion or topical use. Others contained chemicals that cause a rash if brushed against the skin (poison ivy, stinging nettles, etc.). It was important to be able to identify appropriate plants for use.

Many plants that grow along the San Antonio River today at Mission San Juan were present during the Mission Period. Today, the ability to identify plants is used for residential and commercial landscaping. Plants may be selected for their ability to attract desirable wildlife. For example, trumpet vine and turks cap are planted to attract hummingbirds, and lantana to attract butterflies. Other plants may be selected for their xeriscape properties (ability to grow in the absence of large amounts of water). Still other plants may help prevent soil erosion.

## **Elaboration (Pre-visit):**

Instruct students to annotate the written descriptions they were using along their "walk". Annotations should contain comments about the accuracy / inaccuracy of the descriptions. For example, were enough details given to distinguish one plant from another? Was the shape of leaves described? Was fruit or flowers present? Were leaf edges smooth or toothed?

## **Evaluation (Pre-visit):**

1. Return annotated descriptions to the teams who originally wrote them. Instruct teams to select one of the plant descriptions and rewrite it, incorporating the annotations so that it is clear and accurate. Remind them that the goal is to write a description that can be used to properly identify the plant.

2. A team member should then rewrite the description on an overhead transparency in order to present it to the class later.

3. While students are rewriting their descriptions, the teacher selects appropriate pictures for display in front of the class. These should be numbered for identification.

4. Each team presents their new description to the class using the overhead projector.

5. Teams not presenting at the time should discuss and reach a consensus on the plant being described. Their selection should be written on a group scorecard. (A team earns 1 point for each plant they correctly identify from another team's description. Each team that describes a plant earns 1 point for each team that correctly identified the plant.)

### **Engagement (Visit):**

**Instruct students to beware of poison ivy and fire ants, which are prevalent in the area.**

1. Give each student a sheet of copy paper and a crayon. In their previous teams, select one tree and do a bark rubbing.
2. While students are doing bark rubbings, the teacher should "tag" the trees along the trail with numbers. Make a teacher's key as the trees are tagged.

### **Exploration (Visit):**

1. Instruct students to write a description of the bark and leaves of the tree they selected to do their bark rubbing.
2. Distribute plant picture guides to each team.
3. Instruct them to identify their selected tree using the picture guide.
4. As teams finish, collect bark rubbings, descriptions and crayons.

### **Explanation (Visit):**

1. Distribute Scavenger Hunt Scoreboard to each team.
2. Explain to students that the number on their scorecard corresponds to a number on a woody plant along the trail at Mission San Juan. The number may be on a branch or may be located near the plant.
3. Using the plant pictures as a guide to help them, the students will identify the plants marked along the trail.

### **Elaboration (Visit):**

4. Send each team with an adult on the paved trail. Allow a minimum of 5 minutes between teams.
5. Teams should identify tagged trees by using their guides as a resource. Tree names should be written on the team's scorecard next to the appropriate number.

### **Evaluation (Visit):**

1. Teams will turn in scorecards upon completion of the trail.
2. Teams may evaluate their scorecard for accuracy by checking against the teacher's key
3. All tags should be removed at the end of this activity. Also, check for any stray papers, crayons, etc.

## **Activity 1 (Post-visit)**

### **Engagement:**

Ask students if they have ever gotten stains on their clothes that did not come out with washing. Lead discussion to elicit plants or foods that may have stained their clothes. Discuss that these plant and/or food materials could also be used as dyes to color fabrics. Native Americans and early settlers often used plant materials as dyes for clothing and other uses.

### **Exploration:**

Allow students to investigate plant materials brought in by teacher. Brainstorm and list ways these materials may be used.

### **Explanation:**

1. Explain that the students will be using natural materials to make a dye to color fabric at a later time.
2. Following directions given, students prepare their plant dyes.

## **SOLAR DYEING**

- a. Place a generous amount of the plant material to be used as the dye source in a gallon glass jar. Fill jar with water (use caution when handling glass jars). Cover jar tightly to keep down odors and mold.
- b. Carefully transport glass jars to a sunny location. Check daily for the next 3-7 days to see if the water is becoming colored. (For safety, do not leave out overnight.)
- c. When the water is a deep color, strain plant material out of water, saving the colored water. Return colored water to jar.
- d. Place the cotton or wool to be dyed in the jar. When the material has reached a desirable color, remove from jar and hang or lay out to dry. Do not dry in the sun.

## **Elaboration:**

Squares of dyed unbleached domestic cotton may be sewn together to make a classroom quilt, coverlet or wall hanging. Student names and designs may be placed on dyed squares with liquid embroidery or waterproof markers. This activity may be tied in with quilting and social studies.

### **Evaluation:**

Write a "how to" paragraph explaining the dye-marking process.

## **Activity 2 (Post-visit)**

### **Engagement:**

1. Distribute street map of San Antonio.
2. Using the street key have students find the name of the street on which the school is located and the name of one well-known street.
3. Show the students how to locate the grid block of the area where the street is found (example: G-2, A-15, etc.).

### **Exploration:**

1. List on chalkboard the names of plants identified at Mission San Juan or have students can look at the scorecard to recall plant names.
2. Instruct teams to locate San Antonio streets with names of plants they found at San Juan. When a street has been located, list the plant name and the street's location.
3. Teams should list as many streets with names of plants as they can find. Plant names besides those found at Mission San Juan may also be used.

4. Names should be found in Spanish and English.

### **Explanation:**

Plants played an important role in the lives of people who settled in this area. They served as food sources, building materials, fabric dyes, household utensils, and medicines. Streets were often named after native plants that grew and thrived in the area.

### **Elaboration:**

1. After a given amount of time, distribute copies of street sign cards.
2. Teams will match pictures of the plants with pictures of street signs. In the beginning they can check themselves by looking on the back of the plant card to see what it is called.

### **Evaluation:**

Each team should develop a score card on which to record the amount of time each member needed to correctly match plants to street names. Also, record the number correctly identified.

### **Enrichment:**

Have a scavenger hunt through magazines, seed catalogs, newspapers, etc., to find plants whose names were on the city map.

Students may also wish to photograph plants and/or street signs.

### **Resources:**

Teacher:

Project Wet  
Curriculum and  
Activity Guide. 1996.  
Watercourse and  
Council for  
Environmental  
Education

Tull, Delena. 1984. A  
Practical Guide to  
Edible and Useful  
Plants. Austin: Texas  
Monthly Press

Vines, Robert A. 1994.  
Trees of Central  
Texas. Austin:  
University of Texas  
Press

Students:

Favorite field guides  
on native woody  
plants.

## **Skills:**

### **Language Arts:**

5, 6.15 Writes for a variety of audiences and purposes, and in a variety of forms.

5, 6.15F Chooses the appropriate form for his/her own purpose do writing, including journals, letters, reviews, poems, narratives and instructions.

6.15A Writes to express, discover, record, develop, reflect on ideas and to problem solve.

6.15C Writes to inform such as to explain, describe, report and narrate.

5.19, 6.18 Selects and uses writing processes for self-initiated and assigned writing.

5.19A, 6.18A Generates ideas and plans for writing by using such prewriting strategies as brainstorming, graphic organizers, notes and logs.

5.19B, 6.18B Develops drafts by categorizing ideas, organizing them into paragraphs, and blending paragraphs in larger units of texts.

5.19C, 6.18C Reuses selected drafts by adding, elaborating, deleting, combining, and rearranging text.

5.20, 6.19 Evaluates his/her own writing and the writing of others.

5.20A, 6.19A Applies criteria to evaluate writing;  
5.20B, 6.19B Responds in constructive ways to others' writing.

5.20C, 6.19C Evaluates how well his/her own writing achieves its purposes.

5.20, 6.19D Analyzes published examples as models for writing.

### **Science:**

5.1, 6.1 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.

5.1A, 6.1A Demonstrates safe practices during field and laboratory investigations; and

5.1B, 6.1B Makes wise choices in the use and conservation of resources and the disposal or recycling of materials.

5.2, 6.2 Uses scientific methods during field and laboratory investigations.

5.2B, 6.2B Collects information by observing and measuring;

5.3, 6.3 Uses critical thinking and scientific problem solving to make informed decisions.

5.3C, 6.3C Represents the natural world using models and identifies their limitations.

6.13 Knows that the responses of organisms are caused by internal or external stimuli.

6.13A Identifies responses in organisms to internal

stimuli such as hunger or thirst.

6.13B Identifies responses to external stimuli such as the presence or absence of heat or light

6.13C Identifies components of an ecosystem to which organisms may respond.

### **Social Studies:**

5.6 Uses geographic tools to collect, analyze, and interpret data.

5.6A Applies geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps.

5.7 Understands the concept of regions.

5.7B Describes a variety of regions in the U.S. such as landforms, climate, and vegetation regions that result from physical characteristics.

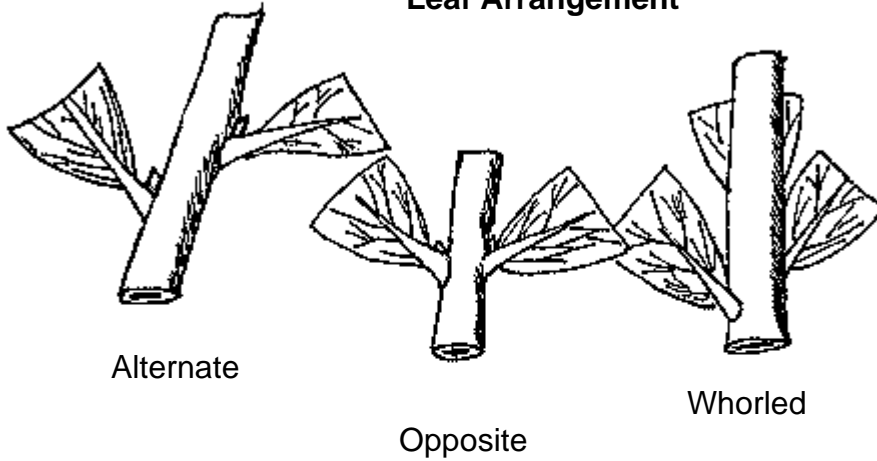
6.7 Understands the impact of interactions between people and the physical environment on the development of places and regions.

6.7A Identifies and analyzes ways people have adapted to the physical environment in selected places and regions.

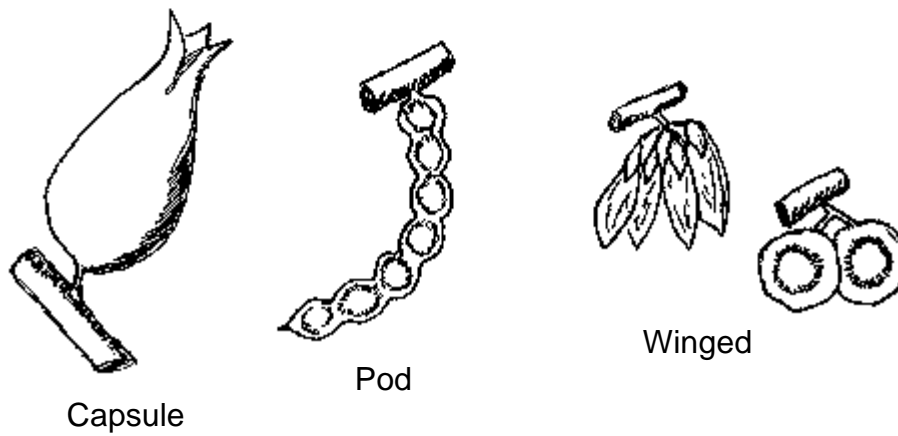
6.7B Identifies and analyzes ways people have modified the physical environment.

# ILLUSTRATED GLOSSARY

## Leaf Arrangement



## Fruit Types



## Leaf Margins



Smooth



Wavy



Toothed



Lobed

## Leaf Shapes



Ovate



Obovate



Elliptic

Oblong



Heart-shaped



Triangular



## Leaf Bases



Round



Tapered



Truncate



Heart



Oblique  
Uneven



Lobed

# ON SITE SCAVENGER HUNT SCORE CARD

Tree number	Common Name	Scientific Name	Team Score
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
		Team Score	

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**